ABSTRACT

Electro-thermal feedback is utilized for zeroing the thermal conductance between a bolometer type detector element of a pixel in a thermal radiation sensor assembly and the environments through its mechanical support structure and electrical interconnects, thereby limiting the thermal conductance primarily through photon radiation. Zeroing of the thermal conductance associated with the mechanical support and electrical readout interconnect structures is achieved by electro-thermal feedback that adjust the temperature of an intermediate stage by the heating effect of a bipolar transistor amplifier circuit so that the temperature across the mechanical support and electrical interconnects structures are zeroed thereby greatly improving the thermal isolation, the responsivity and sensitivity of the electromagnetic radiation sensor.